

REMARKS

Claims 1-12 and 14-35 are pending in the present application. In response to the Office Action mailed December 21, 2009, Claims 1 and 35 have been amended. The subject matter of the amendment to Claim 1 is disclosed in original claim 14 and on page 8, lines 11-17 in the application as filed (published as WO 2005/003178). Claim 35 has been amended to delete the phrase "as defined in method A". Claim 14 has been cancelled. No new matter has been added. Claims 1-12 and 15-35 are presented for examination.

Claims 1-12 and 14-35 have been rejected under 35 USC § 102 (b) as anticipated by or, in the alternative, under 35 USC § 103 (a) as obvious over JP 59-124902 and Owens et al. (US 2444266). According to the PTO, JP 59-124902 teaches a method for producing pectin comprising adding an aqueous solution of an acid and/or an inorganic acid salt into a plant material, heating, adding an alkaline agent and separating. Owens et al. teach a method for producing pectin comprising adding an aqueous solution containing an inorganic salt into a plant pectin-containing material, adding an alkali agent and separating. Based on the above, the Examiner states that the claims merely appear to differ as to the swelling of the plant material, which according to the Examiner, would be inherent and/or obvious in view of JP 59-124902 and Owens et al. Applicants respectfully disagree for the reasons set forth below.

A. Claims 1-12 and 14-35 are novel under 35 U.S.C. §102 (b)

Under 35 U.S.C. § 102(b), "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). "Invalidity for anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference...There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." *See Scripps Clinic & Research Foundation v. Genentech, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991). Claim 1 has been amended to specify that the de-esterification treatment in step (ii) is an alkaline treatment having a pH above 10.0. Applicants submit that the art cited by the PTO fails to teach, expressly or inherently, this limitation. Accordingly, Claim 1 and the claims depending therefrom are novel under 35 U.S.C. §102(b).

JP 59-124902 discloses a process for the extraction of pectin from a vegetable material. The pH value used to accomplish the extraction is in the range of pH 1-6. The process includes the step of swelling the vegetable material in an aqueous solution comprising an ammonium salt. Notably, no chemical treatment of the pectin molecules is performed, while the pectin molecules are still forming part of the vegetable material. Moreover, during extraction, the pH value described in JP 59-124902 is quite different from the pH value described in amended Claim 1. Thus, JP 59-124902 does not disclose an *in situ* reaction system for the treatment of pectin polymers at a pH-value above 10, when the pectin polymers are still present in the plant material.

Owens et al. (US Patent No. 2,444,266) discloses a method for treating and isolating pectin polymers from a plant material, such as peel of orange. The method involves dissolving the plant material in an aqueous solution comprising sodium hydroxide giving a pH of 6-10, preferably pH 8-10, which is considered the optimal reaction pH as it favors the action of the pectin-esterase present in the orange peel. During the process, sodium hydroxide is continuously added in order to keep the pH in the selected range. US 2,444,266 does not disclose the addition of neutral salts to the solution to support or assist the formation of the cellulose-hemicellulose-pectin network providing the stable *in situ* reaction system at a pH value above 10.0.

Neither JP 59-124902 nor Owens et al. teach or suggest that the de-esterification treatment in step (ii) is an alkaline treatment having a pH above 10.0 as is presently claimed. Moreover, neither of the cited references inherently discloses this claimed feature. "A claim limitation is inherent in the prior art if it is necessarily present in the prior art, not merely probably or possibly present." *Akamai Technologies, Inc. v. Cable & Wireless Internet Svcs., Inc.* 344 F.3d 1186 (Fed. Cir. 2003) (emphasis added). Further, in relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (B.P.A.I. 1990). Applicants respectfully submit that the PTO has not established nor can it establish such a basis for alleging that the present claims are inherently anticipated. Thus, Applicants kindly request that the rejections under 35 U.S.C. § 102 (b) be withdrawn.

B. Claims 1-12 and 14-35 are patentably non-obvious under 35 U.S.C. § 103(a) in view of the cited art

The PTO also asserts that Claims 1-12 and 14-35 are rendered obvious over JP 59-124902 and Owens et al. (both references are discussed above with reference to the §102 (b) rejections). Applicants respectfully traverse.

The crux of the present invention relates to the treatment of pectin polymers within the natural and fibrous environment of the plant material before isolating the fibre-containing pectin product (the de-esterified product) and optionally, extracting pectin products (de-esterified products) from the fibrous state. According to the present invention, de-esterified pectin polymers having a large molecular weight (measured as viscosity) can be provided by conducting the chemical treatment(s) within the fibrous network of the pectin-containing material. Therefore, according to the claimed invention, it is required that an *in situ* reaction system is provided and sustained during the treatment of the pectin-containing plant material, as defined in claim 1, step (i). Furthermore, it is particularly preferred that the plant material is sustained in a swelled state during the treatment of the pectin, such as during de-esterification and amidation of the pectin-polymer. Otherwise, the disintegrated plant material will result in the formation of a paste which is difficult to handle. Hence, to sustain the plant material in a swollen state, it is suspended in an aqueous saline solution. The aqueous saline solution may preferably contain a di- or trivalent cation and form a pectinate salt or gel which assists in the formation of the swollen pectin-containing plant material network, i.e. the *in situ* reaction system.

By treating the pectin polymers in this *in situ* reaction system, it becomes possible to provide pectin polymers having a high molecular weight and a more homogeneous distribution of the de-esterified sites in the pectin polymer, which thereby provides products with unexpectedly superior gel-forming and/or viscous giving properties. Thus, it is an important feature of the present invention that an *in situ* reaction system is provided wherein the de-esterification is performed. The Applicants submit that none of the cited prior art disclose an *in situ* reaction system as is presently claimed.

However, in order to further distinguish the claims from JP 59-124902 and Owens et al. (US 2,444,266) reference is made to claim 1 as amended. Claim 1 has been amended to specify that the de-esterification treatment in step (ii) is an alkaline treatment resulting in the formation

of a suspension having a pH above 10.0. JP 59-124902 discloses a process for the extraction of pectin from a vegetable material. The process comprises the step of swelling the vegetable material in an aqueous solution comprising an ammonium salt. However, no chemical treatment of the pectin molecules is performed, while said pectin molecules are still forming part of the vegetable material. Thus, JP 59-124902 does not disclose an *in situ* reaction system for the treatment of pectin polymers at a pH-value above 10, when said pectin polymers are still present in the plant material.

Furthermore, US 2,444,266 discloses a method for treating and isolating pectin polymers from a plant material, such as orange peel. The method involves dissolving the plant material in an aqueous solution comprising sodium hydroxide at a pH of 6-10, preferably pH 8-10, which is considered being the optimal reaction pH as it favours the action of the pectin-esterase present in the orange peel. During the process, sodium hydroxide is continuously added in order to keep the pH in the selected range. A non-obvious effect of the difference between the present invention and US 2,444,266 is that de-esterification of the plant material may be performed more quickly relative to process described by Owen et al. Consequently, the presently claimed process provides a more homogenous distribution of the de-esterified sites. US 2,444,266 does not disclose the addition of neutral salts to the solution to support or assist the formation of the cellulose-hemicellulose-pectin network providing the stable *in situ* reaction system at a pH value above 10.0. A non-obvious effect of the difference between the present invention and US 2,444,266 is that de-esterification of the plant material may be performed in a fast manner which provides a more homogenous distribution of the de-esterified sites.

The prior art as a whole does not teach or fairly suggest a method for providing a fibre-containing pectin wherein the de-esterification step achieves a pH above 10. In order for an obviousness rejection to stand, every limitation must be taught or suggested by the prior art. Neither JP 59-124902 nor Owen et al. describe a method for providing a fibre-containing pectin as is presently claimed. Applicants submit that for at least these reasons, a *prima facie* case of obviousness has not been established, and therefore Applicants respectfully request that the rejection of the pending claims under 35 U.S.C. § 103(a) be withdrawn.

In view of the amendments and remarks, Applicants submit that it is neither obvious nor inherent to provide an *in situ* reaction system for the treatment of pectin polymers at a pH-value

Application No.: 10/563,455
Filing Date: August 31, 2006

above 10, when said pectin polymers are still present in the plant material. Hence, neither JP 59-124902 nor US 2,444,266 discloses the features of the present invention. Therefore, claims 1-12 and 14-35 are novel and involve an inventive step in view of any of JP 59-124902 and US 2,444,266 alone or in combination.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Application No.: 10/563,455
Filing Date: August 31, 2006

C. Conclusion

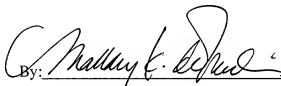
In view of the above, Applicants respectfully submit that claims are patentable and request that they be passed to issue. Applicants invite the Examiner to call the undersigned if any remaining issues may be resolved by telephone.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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